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February 4, 2005

City of Long Beach
Department of Public Works
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Attn: **Mr. Tom Leary, Stormwater Program Officer**

Subject: **Deliverable for Task 12, *Scope of Work for Next Phase of Restoration Planning*, Colorado Lagoon Restoration Feasibility Study**

Reference: ***Colorado Lagoon Restoration Feasibility Final Report*, Moffatt & Nichol, February 4, 2005**
M&N File: 5425

Dear Mr. Leary:

This letter report provides the *Scope of Work for Next Phase of Restoration Planning* deliverable for the Colorado Lagoon Restoration Feasibility Study. This deliverable is part of Task 12 (Prepare Scope of Work for Next Phase of Restoration Planning).

Background

In May 2004, a feasibility study began to evaluate and recommend ways to integrate and improve the multiple uses of the Colorado Lagoon, such as habitat, recreation and stormwater management. This study has been completed and the *Colorado Lagoon Restoration Feasibility Final Report* has been submitted. The final report summarizes the data gathered during the study and provides an evaluation and ranking of potential restoration alternatives. This letter report herein presents an assessment of outstanding issues from the feasibility study, tasks to address those issues, and other necessary tasks to complete before detailed planning can occur.

Outstanding Issues

This study addressed the issues that were identified in the *Work Program* document at the outset of the project. Additional issues were identified during the study and it is recommended that these be addressed during the next phase of planning. These issues are:

- **Watershed Pollutant Specific Source Identification -** The need for more specific identification of pollutant sources within the watershed area. The study assessed the types and levels of pollutants that currently exist in the lagoon's water and sediment, and potential pollutant sources**.** Colorado Lagoon is a basin for an 1,172-acre watershed and eleven storm drains discharge into it. The primary pollutants of concern in Colorado Lagoon are lead, various organochlorine pesticides (DDT compounds, chlordane and dieldrin), and PCBs.

These compounds are known as persistent, bioaccumulative and toxic compounds (PBTs). They are also often referred to as "legacy" pollutants, meaning there are relatively few current uses, but past uses have left large amounts in the environment. Widespread historic use of these compounds apparently resulted in releases to soils and storm drains in the area. Since these compounds are highly persistent and strongly associate with particulate matter, both soils and accumulated storm drain sediments may potentially contain PBTs released many years ago. Although stormwater programs have rarely reported PBTs above reporting limits in wet weather discharges, they are routinely among the primary constituents cited as the cause for listing of receiving water bodies in Southern California. PBTs encountered in sediments around stormwater outfalls typically consist of various organochlorine pesticides and PCBs. Alternatives have been developed to remove the contaminated sediment from the lagoon, however there is a concern that these contaminants will continue to enter the lagoon if their source is not identified. In order to more specifically identify the individual pollutant source, a significant effort is a required. The need for this task has been identified as an immediate near-term priority.

- **Additional Sediment Sampling -** The need for sediment sampling in the central swimming area of the lagoon. The initial sampling effort was designed to characterize three major zones within Colorado Lagoon (the western arm, near the culvert, and the northern arm). Cores were taken from three locations within each zone and composited to produce a representative sample for that zone. No samples were taken from within the lagoon's designated swimming area. Contaminated sediments were found in the western arm, and to a lesser extent near the culvert. Two alternatives were developed to remove the contaminated sediment. One alternative is for removal of sediment in the western arm and extends to the east to the foot bridge. The removal of the sediment in this area is considered mandatory. The other alternative is for removal of sediment for an area that extends from the east of the foot bridge to the culvert area, inclusive of the central lagoon's swimming area. Based on the levels of contaminants near the culvert, the removal of sediment in that area is optional and may not be chosen for implementation. The boundary as defined by the foot bridge was somewhat arbitrary and there is concern that the mandatory removal area may need to be extended further to the east of the foot bridge. It is proposed that further sediment sampling be completed in this swimming area.
- **Culvert Impedances Evaluation**- The need to better identify and characterize the specific areas within or outside of the culvert that require removal of impedances. Hydraulic modeling was completed and showed that the tides in the lagoon are significantly truncated compare to those at Marine Stadium (connected via the culvert). Specifically, the low tides of the lagoon are muted by approximately 2 feet as compared to the low tides of the Marine Stadium and the Ocean. This results in reduced flushing of the lagoon. Visual observation revealed structural impedances on both ends of the lagoon – a rock sill on the Marine Stadium end of the culvert and a structural sill on the lagoon end of the culvert. The structural sill may have been installed at the lagoon end of the culvert many years ago in order to keep the water levels in the lagoon high enough for the safety of swimmers.

Also, sediment has accumulated on the bottom of the culvert and marine organisms have accumulated on the sides and ceiling. An alternative was developed to clean the culvert, repair the tidal gates, and remove the impedances. An engineering survey from within the culvert is needed in order to develop the most effective approach to implement this alternative.

- **Flood Dike Impacts** - The potential for the proposed flood dike alternative to cause flooding upstream. Hydrologic and hydraulic analysis identified the potential for flooding in an area adjacent to the lagoon during a 50-year storm and high tide conditions. An alternative was developed to construct a low, earthen, flood protection dike, approximately 200 feet long, on the lagoon perimeter near the corner of Colorado Street and Eliot Street. A concern was raised that this dike may cause the storm drains to back up and cause flooding in the upstream watershed areas. This assessment requires a detailed hydraulic analysis of the storm drain system.
- **North Shore Beach Erosion -** The need to address the beach erosion/gullying problem from storm runoff on the southern shore of the lagoon, just west of the lifeguard station. Following recent storm events, four- to five-foot-deep gullies were created on the sandy beach area just west of the lifeguard station. These gullies appear to have been created by surface stormwater runoff from the adjacent paved areas. Planting of a vegetative buffer along this reach is included in an alternative to address this issue, but further investigation is needed to better understand this problem and to develop the most effective approach to prevent erosion of this area, proposed to be established as a sandy intertidal habitat area as part of the restoration plan.

Detailed Scope of Work (SOW) for Next Phase

The SOW for the next phase of planning contains two types of tasks: 1) the tasks which address the issues identified above and 2) other tasks necessary prior to implementation of detailed planning. The first five tasks listed below are from the first category and the last three tasks are from the second category.

- **Task 1 - Watershed Pollutant Specific Source Identification -** The need for more specific identification of pollutant sources within the watershed area. The major goal of this task is to identify areas within the watershed that may continue to serve as significant sources of PBTs or other constituents of concern. Despite the fact that most PBTs have been banned for many years, current evidence suggests that certain areas of the urban landscape continue to contribute significant loads of these contaminants to urban storm drains and ultimately nearshore waters. Identification of these "hotspots" provides the opportunity to achieve substantial load reductions through implementation of focused BMPs or, if possible, remediation of the source area.

  Meeting this goal requires an adaptive approach that utilizes field sampling results to develop subsequent sampling plans to isolate source areas. The specific tasks are:

A. Obtain drainage, land use information and any available records of historical use or spillage of PBTs for each watershed sub-basin of concern. Current information suggests that the sub-basins of primary concern are those that enter the western arm of Colorado Lagoon.
B. Develop a sampling plan for each sub-basin that includes sites near the discharge point and at locations that isolate major branches. This typically requires four to eight sites depending upon the size and configuration of the drainage system.
C. At each site collect residual sediments trapped in the drainage system.
D. Sieve sediments through #200 sieve to remove large debris and coarse material.
E. Analyze the fine fraction for lead, DDT compounds, chlordane compounds, dieldrin, and PCBs.
F. Analyze total organic carbon (TOC), particle size composition and percent moisture.
G. Utilize the results of the initial survey to determine if further investigation is warranted. If high levels of any targeted compounds are found in any one branch of the watershed, drainage and detailed land use data would be reviewed to develop a sampling plan that would further isolate areas within the sub-basin and additional sampling may be required.
H. Develop focused Best Management Practices for those areas identified as significant sources of pollutants of concern.

- **Task 2 - Additional Sediment Sampling -** The need for sediment sampling in the central swimming area of the lagoon. This task is designed to provide improved information on the spatial extent of contamination in order to allow for a sound basis for delineation of the sediment removal area. Comparison of recent sediment tests conducted using only surficial sediments with data from the sediment cores indicates that high levels of contamination are evident at both the surface and in the deeper sediments. Based upon those results, surface samples will be used to characterize the horizontal extent of contamination.

  The general approach will be to develop three cross-sectional areas to the west of the foot bridge and four cross sectional areas to the east of the footbridge (Figure 1).

  A. Establish each cross section at approximately 100 feet in width.
  B. Take three surface grab samples in the center of each cross section.
  C. Composite equal portions of sediment from the three samples into a single sample. This will result in seven sediment samples.
  D. Analyze each composite for lead, organochlorine pesticides, and PCBs.
  E. Analyze sediment particle size, total organic carbon, and percent moisture to enable normalization of the data.
  F. Analyze a blind field replicate from one of the sites for quality assurance.
  G. Use the results of the field survey to recommend the most appropriate eastern limit for removal of sediment from the lagoon.

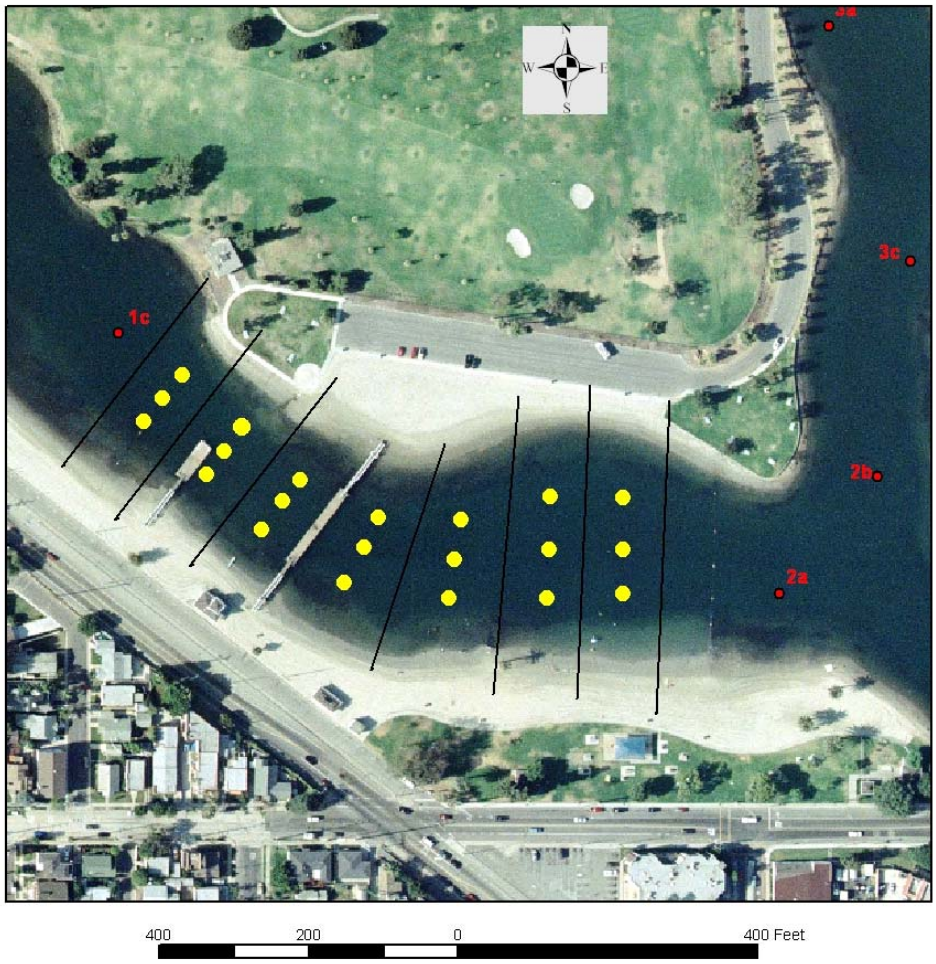

Figure 1 - Proposed sampling strategy for establishing spatial limits for sediment removal.

- **Task 3 - Culvert Impedances Evaluation -** The need to better identify and characterize the specific areas within or outside of the culvert that require removal of impedances. An engineering survey from within the culvert is needed in order to develop the most effective approach to implement this alternative. The following tasks are recommended:
  - A. An engineer should inspect the interior and immediate outlet areas for the existence of sills and impedances;
  - B. Calculate the effects of any observed impedances on tidal flow, and compare the estimates with hydraulic model results for this project;
  - C. Determine remedial actions to remove the impedances.
  - D. Design improvements.

- **Task 4 - Flood Dike Impacts -** The potential for the proposed flood dike alternative to cause flooding upstream. This assessment requires a detailed hydraulic analysis of the storm drain system. The following tasks are needed to study the problem:
  A. The HEC-1 numerical model should be used by a hydraulic engineer to calculate the hydrograph from each sub-basin of the watershed and the entire watershed.
  B. Then the HEC-RAS model could be used to calculate the water surface elevations within each storm drain network for the two scenarios of existing condition and with the flood berm.
  C. Water surface elevations can then be used to estimate the backwater effect within the storm drainage system and potential upstream flooding.
  D. Improvements to the flood berm concept or the storm drain system can be designed from these data and analyses.
- **Task 5 - North Shore Beach Erosion -** The need to address the beach erosion/gullying problem from storm runoff on the southern shore of the lagoon, just west of the lifeguard station. Further investigation is needed to better understand this problem and to develop an approach to prevent erosion of this area. The following tasks are appropriate:
  A. Observe runoff on-site during a severe storm;
  B. Visit the site immediately after the storm to assess erosion;
  C. Design improvements to solve the problem.
- **Task 6 - Pre- and Post-Restoration Monitoring Plan**. Develop and implement a pre-restoration monitoring plan to document the existing conditions of the lagoon, and that can be continued into the future after implementation of restoration alternatives in order to measure restoration success. The parameters to be measured are listed in the target goals table of the *Feasibility Final Report*. This task includes training and development of protocols that are appropriate for use by volunteer organizations.
- **Task 7 - Permitting**. The approach to this task is to obtain federal, state and local agency permits for the maximum (entire) set of preferred alternatives. The project will require permits from several agencies with jurisdiction over the activity. Coordination with and approval by NOAA Fisheries (formerly the National Marine Fisheries Service) and the U.S. Fish & Wildlife Service will also have to occur as part of the permitting effort. The permits to be obtained are listed below.
  - ***Sections 10 and 404 Permit from the U.S. Army Corps of Engineers.*** The U.S. Army Corps of Engineers (USACE) has jurisdiction over "waters of the U.S." from the Clean Water Act, the Rivers and Harbors Act, and the National Environmental Policy Act (NEPA). The USACE issues a Sections 10 and 404 permit for construction in such waters, and placement of fill or dredging in waters of the U.S., respectively.
  - ***Section 401C Certification from the Regional Water Quality Control Board.*** The Regional Water Quality Control Board (RWQCB) permits activities covered under

Section 401 of the Clean Water Act. The RWQCB issues a Section 401C Certification for construction projects proposing fill or material removal in jurisdictional waters. The permit is a prerequisite for securing permits from federal agencies. The RWQCB considers whether existing water quality will be impaired by the project and requires conditions to minimize possible impacts, such as monitoring. They can also require mitigation if impacts are documented. Approximately three months is required to secure the permit assuming one month for clarification of the initial permit application, and two months to process the permit. A fee will also be required and varies depending on the proposed action.

- ***Waste Discharge Requirements from the Regional Water Quality Control Board.*** The RWQCB also permit removal and discharge of sediments under Waste Discharge Requirements under the Clean Water Act. Approximately three months is also required to secure the permit and this permitting can occur concurrently with other RWQCB permits. A fee will also be required and varies depending on the proposed action.
- ***Dewatering Permit from the Regional Water Quality Control Board.*** The RWQCB permits dewater activities under the Clean Water Act. As with the other RWQCB permits, approximately three months is required to secure the permit and this permitting can occur concurrently with other RWQCB permits. A fee will also be required and varies depending on the proposed action.
- ***Stormwater Permits from the Regional Water Quality Control Board.*** The project will require the General Construction Activity Storm Water Permit from the RWQCB. The permit requires completion of a Notice of Intent to Discharge (NOI) form, and preparation and implementation a Storm Water Pollution Prevention Plan (SWPPP) mainly requiring adequate erosion control measures.
- ***Coastal Development Permit from the City of Long Beach.*** The City has permitting authority over activities within the Coastal Zone according to their Local Coastal Program (LCP). The City will examine the project's consistency with the LCP, and potential effects to public access, recreation and the environment. The permit can take four to six months to secure, depending on the level of potential controversy or impact.
- ***Coastal Development Permit from the California Coastal Commission.*** The California Coastal Commission (CCC) has jurisdiction over activities within the Coastal Zone, extending approximately one mile inland. They retain the right to appeal a local decision and can take action if deemed appropriate. The CCC examines the project's consistency with the Coastal Act, and potential effects to public access, recreation and the environment. If needed, the permit can also take four to six months to secure. Requirements to secure this permit are possession of the RWCQB permit and a certified CEQA document.
- ***Streambed Alteration Agreement from the State Department of Fish and Game.*** A 1600-1601 Streambed Alteration Agreement from the State Department of Fish and

Game (CDFG) will be required by the CDFG to modify the lagoon. This agreement requires 3 to 6 months to secure, and will be required prior to USACE approval. Typically, the CDFG reviews the project, assesses impacts and benefits, and negotiates conditions as appropriate.

- **Task 8 - Environmental Review**. The approach to this task entails completing the federal and state environmental review processes for the maximum (entire) set of preferred alternatives.
  - ***National Environmental Protection Agency (NEPA)***. The USACE analyzes the project under NEPA for environmental effects and can either prepare a Finding of No Significant Impact (FONSI) document for non-impacting projects, an Environmental Assessment (EA) for projects that may cause impacts but that are mitigable, or an Environmental Impact Statement (EIS) for projects to cause significant impacts that are not mitigable. This project will likely require an EA or EIS. The USACE also requires the RWQCB permit to be secured. Securing the Sections 10 and 404 permit can take up to twelve months and no fee is required.
  - ***California Environmental Quality Act (CEQA).*** The City of Long Beach is considered the Lead Agency for the project and will have to meet requirements of the CEQA. CEQA requires projects of a certain magnitude and impact to be reviewed for environmental impacts. The type of document to be prepared depends on the degree of potential environmental impact identified in the CEQA Initial Study. A Negative Declaration (ND) is prepared for projects will not cause significant impacts, while a Mitigated Negative Declaration (MND) is required for projects that may cause significant impacts that can be mitigated. An Environmental Impact Report (EIR) is prepared for projects causing potentially significant impacts that cannot be mitigated. This project may be appropriate for a Mitigated Negative Declaration or an EIR. The time period for completion and certification of an MND is approximately four to six months depending on preparation and review periods. Public review is 30 days long. An EIR may take twice that time period to complete and certify.

Summary/Conclusions

The *Restoration Feasibility Final Report* outlines a proposed set of next steps for this project, up to but not including final engineering for construction. These steps directly relate to the tasks described in this letter report. Specifically, the recommended course of action includes the steps listed below. As stated in that report, the order of approach should generally start with Step 1 (either in whole or in part), and move through subsequent steps. However, the order can vary after Step 1 depending on the results of Step 1 data analyses and/or the availability of funding.

1. Address the five outstanding issues discussed above (Tasks 1 - 5).
2. Apply for funding to implement and monitor the performance of the preferred alternatives.

3. Develop and implement a pre-restoration monitoring plan (Task 6)
4. Perform permitting and environmental review of the preferred alternatives (Tasks 7 and Task 8). Additional studies may be required as part of this effort.
5. Perform required final engineering designs for alternatives to be implemented.
6. Implement the alternative to clean the culvert, coupled with monitoring. If monitoring indicates desired improvements does not occur, pursue implementation of the alternative to construct an open channel between Colorado Lagoon and Marine Stadium.
7. Implement the alternative to remove contaminated sediments in the western arm and based on results of the data analyses in Task 2, possibly implement the alternative to remove sediment in the central area or a modified version thereof as appropriate.
8. Implement all other preferred remediation and restoration alternatives as funding becomes available, including development of a sand management plan.

This deliverable represents the conclusion of this study. We have enjoyed working with you and look forward to the next phase of this important project. Please contact Kim Garvey or me at 562-426-9551 with any questions or comments.

Sincerely,

MOFFATT & NICHOL

Chris Webb
Project Manager